REMARKS

Reconsideration and allowance are respectfully requested in light of the above amendments and the following remarks.

The specification and claims have been amended to overcome the objections thereto.

Claims 8, 10 and 11 have been amended to replace the phrase "variable geometric characteristics" with the phrase "variable solid angles and variable emission areas." Support for the newly added features is provided in the specification on page 2, line 37, through page 3, line 2. Except for this change to claim 11, all amendments are considered to be non-narrowing, and no estoppel should be deemed to attach thereto.

Claims 2-11 have been rejected, under 35 USC §103(a), as being unpatentable over Cohen (Applied Optics, Vol. 14, No. 6, June 1975). Applicants respectfully traverse.

Original claims 1-7 and 9 were rejected, in the Office Action dated February 11, 2003, as being unpatentable over the teachings of Cohen or the combined teachings of Cohen and other references. In response to these rejections, Applicants submitted on April 28, 2003 a new base claim 11 from which amended claims 2-10 depended.

The Office Action dated July 15, 2003 stated that claims 11 and 2-7 were allowed over the combined teachings of Cohen and the

other previously applied references and that claims 8-10 would be allowable if rewritten to overcome indefiniteness rejections. More specifically, the July 15, 2003, Office Action acknowledged that Cohen failed to disclose an optical system in which the fiber length and reflection ratio were structurally arranged and functionally operated as recited in claim 11.

The present Office Action still acknowledges that Cohen does not disclose the feature recited in claim 11 of adjusting the length of the second fiber and the transmission/reflection ratio (Office Action page 2, last paragraph). The present Office Action proposes that Cohen discloses varying the length of the second fiber several millimeters inside the holder and varying the transmission and reflection coefficients. Based on this proposed interpretation, the Office Action concludes it would have been obvious that varying the length of the second fiber several millimeters within the holder and varying the transmission/reflection ratio would provide the presently claimed functionality (Office Action page 2, last paragraph).

However, the Applicants note that Cohen discloses in Fig. 1(b) that a fiber was placed in a snug fitting hypodermic needle and slid along a groove, milled perpendicularly to a machined face of a holder, until the fiber protruded from the other end of the holder (Cohen page 1352, first column). Then, the fiber end

was broken by scoring it with a tungsten carbide blade and pulling it under tension (Cohen page 1352, first column). Following this, the fiber end was pulled back several millimeters within the holder (Cohen page 1352, first column). A face plate was used to press a mirror against the holder, and the fiber was pushed forward until it contacted the mirror (Cohen page 1352, first column). Finally, an index-matching liquid was dropped in at the end of the groove to improve the optical contact between the fiber and mirror (Cohen page 1352, first column). Good alignment was ensured by the groove, and the same peak power was detected when the fiber was pulled back and re-contacted against the mirror (Cohen page 1352, first column).

In view of the above, it is apparent that, in contrast to the Office Action's proposed interpretation, Cohen merely describes a method of attaching a fiber end to a mirror, using a holder, to provide good alignment and high power transfer between the mirror and fiber.

Cohen clearly fails to teach or suggest adjusting the length of a fiber and the transmission and reflection ratio of first and second mirrors such that there is created at the output of an optical cavity, from a single electromagnetic pulse incident on the optical cavity, a train of emitted electromagnetic pulses that have variable emission solid angles and variable emission

Instead, Cohen simply teaches that moving a fiber end back within the interior of a holder while a mirror is pressed against the holder and thereafter pushing the fiber end into contact with the mirror provides good alignment and power transfer.

Therefore, it is clear that Cohen lacks any teaching or suggestion of adjusting the length of a fiber and the transmission and reflection ratio of first and second mirrors to create a train of emitted electromagnetic pulses that have variable emission solid angles and variable emission areas and that this subject matter is disclosed solely by the disclosure in the present application.

When applying 35 U.S.C. §103, the references must be viewed without applying impermissible hindsight. *Hodosh v. Block Drug Co., Inc.*, 786 F.2d 1136, 1143 n.5, 229 USPQ 182, 187 n.5 (Fed. Cir. 1986); MPEP §2141. In addition, where references are combined, the prior art must provide motivation to make the claimed combination. *In re Vaeck*, 947 F.2d 488, 493, 20 USPQ2d 1438, 1442 (Fed. Cir. 1991) ("[A] proper analysis under §103 requires, *inter alia*, consideration of... whether the prior art would have suggested to those of ordinary skill in the art that they should make the claimed composition or device....").

Moreover, Cohen does not disclose or suggest the features of claim 11 whereby a first partially reflecting mirror is placed

between a first fiber length and a second fiber length and a second partially reflecting mirror is placed between the second fiber length and a third fiber length of an optical fiber.

The Office Action states that Cohen discloses first, second, and third optical fibers on page 1351, column 2.

However, as illustrated in Fig. 1(a), Cohen discloses input and output partially transparent mirrors pressed in contact with the input and output ends of a fiber, respectively (Cohen page 1351, col. 2). Light pulses from a laser are conveyed through two lenses in a non-fiber medium and coupled by the input mirror into the fiber. Light pulses passing out of the fiber at the output end are coupled from the output mirror into a non-fiber medium having two lenses that focus the light on a diode detector. As may be seen by inspection of page 1351, column 2, Cohen does not disclose first, second, and third fibers; instead, only one fiber is disclosed in the cited portion.

In the description of previous pulse-width measuring methods, Cohen discloses that successively shortened lengths of fiber were employed (Cohen page 1351, col. 2). In other words, a single fiber was successively shortened for each measurement and this single fiber is not similar to the claimed structure, which has two mirrors interposed between three fiber lengths.

In summary, the Office Action acknowledges that Cohen does not disclose or suggest adjusting the length of a fiber and the transmission and reflection ratio of first and second mirrors, as recited in claim 11. Cohen also does not teach or suggest adjusting these features to generate variable emission solid angles and variable emission areas, as recited in claim 11. Furthermore, Cohen does not teach or suggest the technique of the present claimed invention for generating these variable characteristics.

Instead, Cohen discloses a device for measuring the relationship between the length of an optical fiber and the temporal pulse spreading of a pulse passing through this optical fiber. Thus, Cohen does not disclose an emitter for emitting electromagnetic pulses.

As illustrated in Fig. 1(a), Cohen's measuring device includes a laser, an optic fiber device, a diode detector, a pulse amplifier, and a calculation means. The optical fiber device includes a sole optical fiber and two partially transparent mirrors that are pressed into contact with the input and output ends of the fiber. This optical fiber device generates a train of pulses that each traverse different distances within the optical fiber, in accordance with the number of times the individual pulse is reflected back and forth between

the two mirrors. The information generated by these pulses is used for determining the relationship between the length of the optical fiber and the temporal pulse spreading. As a result, the aim of this optical fiber device is to overcome the problem of the known procedure in which the fiber is destroyed (see conclusions on page 1356 of Cohen) due to the successive cutting of the fiber to successively shorten it.

Thus, the optical fiber of Cohen's measuring device is not an emitter for emitting electromagnetic pulses that have variable geometry characteristics. Instead, Cohen's measuring device takes into account only the different distance each pulse travels in the fiber when measuring the length dependence of the pulse spreading. Consequently, Cohen discloses a specific measuring device, and not an emitter. Cohen's device is provided for the sole aim of measuring the relationship between the length of an optical fiber and the temporal pulse spreading of a pulse passing through the optical fiber. It is not able to emit electromagnetic pulses outside of the device.

Furthermore, the measuring device of Cohen is a unitary device. Thus, it is not possible to extract a few features (i.e. the optical fiber device) of this unitary device and to set them, as a whole, against a claimed object.

What is essential in Cohen is the length of the optical cavity, that is, the distance between the two mirrors along the pulse path. This length is essential for measuring the length dependence of pulse spreading.

Accordingly, the Applicants respectfully submit that Cohen fails to disclose or suggest all of the instant claimed features and the benefits accruing from them. Therefore, allowance of claim 11 and all claims dependent therefrom is warranted.

Regarding claim 4, Cohen does not disclose a coupling means comprising two lenses and a mirror placed between these mirrors, as specified in claim 4. Therefore, allowance of claim 4 is appropriate for this independent reason.

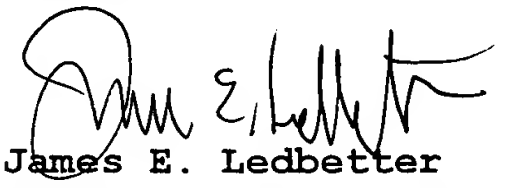
Independent claims 8 and 10 similarly recite features distinguishing apparatus claim 11 from Cohen, though claim 10 does so with respect to a method claim. Thus, claims 8 and 10 are allowable for similar reasons that claim 11 patentably distinguishes over Cohen.

In view of the above, it is submitted that this application is in condition for allowance and a notice to that effect is respectfully solicited.

If any issues remain which may best be resolved through a telephone communication, the Examiner is requested to telephone

the undersigned at the local Washington, D.C. telephone number listed below.

Respectfully submitted,



Date: January 14, 2004
JEL/DWW/att
Attorney Docket No. L7307.01106

James E. Ledbetter
Registration No. 28,732
STEVENS DAVIS, MILLER & MOSHER, L.L.P.
1615 L Street, N.W., Suite 850
P.O. Box 34387
Washington, D.C. 20043-4387
Telephone: (202) 785-0100
Facsimile: (202) 408-5200